

### Testing techniques

STS-69 space walk begins an era of getting down to the nuts and bolts of building the space station. Story on Page 3.



### Snoopy simulation

Cartoonist Charles Schulz recently checked out shuttle mission simulator. Photo on Page 4.

# Space News Roundup

Vol. 34

August 11, 1995

No. 32



Carolyn L. Huntoon

## Huntoon leads planning for life sciences institute

By Jeff Carr

NASA Administrator Daniel S. Goldin announced last Friday that, effective immediately, JSC Director Dr. Carolyn L. Huntoon has taken on a special assignment for the administrator to lead the development of plans for a new sciences institute for biomedical research.

As a key part of her assignment, Huntoon will represent the agency in establishing a dialogue with

potential national and international participants in the life sciences institute. She will represent the administrator in these efforts. JSC Deputy Director George Abbey will serve as acting center director.

NASA officials previously announced plans to create science institutes to help streamline the agency's management structure and improve the quality of its scientific research. As envisioned by

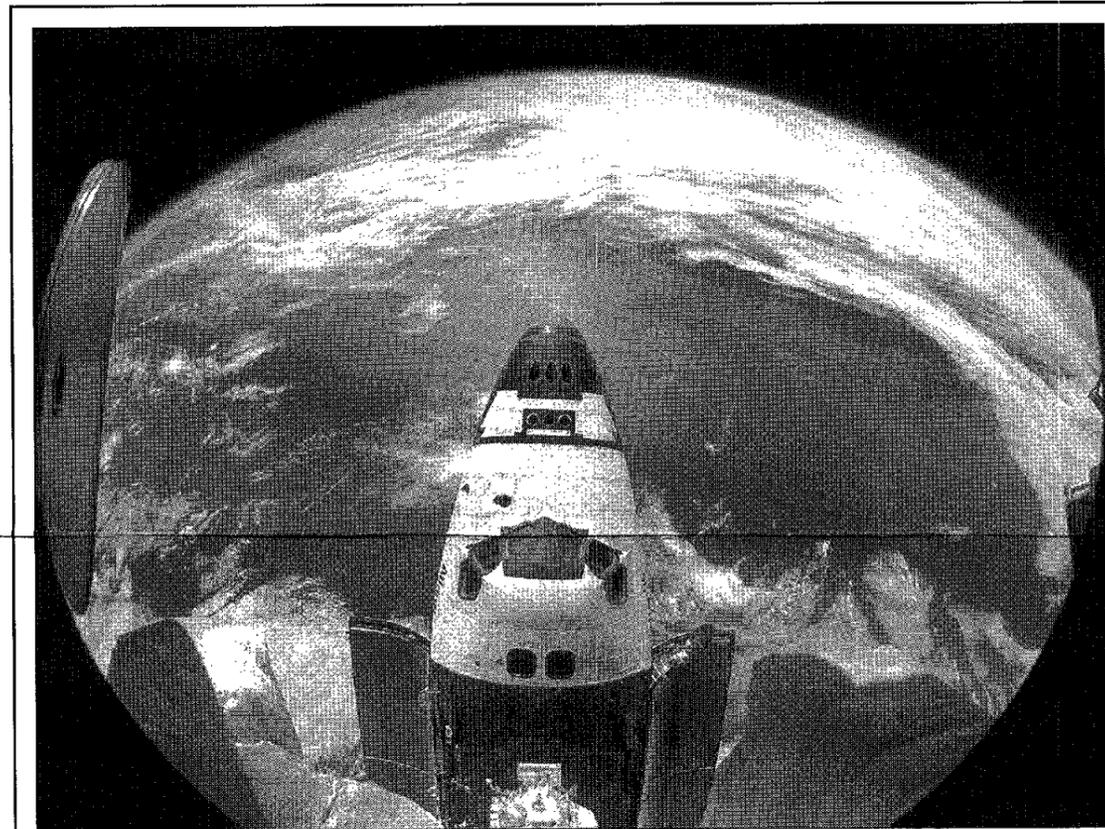
NASA, the institutes would be privatized arrangements in which government-owned assets are managed by an external entity, such as a university, an industrial organization or a consortium.

"Outside involvement and participation are key to the success of the institute approach," Goldin said. "Dr. Huntoon, as an internationally-recognized scientist, is the perfect

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George W. S. Abbey



This Imax image of the nose of *Atlantis* was taken from the Russian *Mir* Space Station during STS-71. This and other images now are available on the Shuttle Home Page or the NASA Home Page.

## IMAX images available on Internet

Several dramatic new images highlighting the historic docking of the Space Shuttle *Atlantis* and the *Mir* space station now are available via the Internet.

The high resolution images show crew activities and views of *Atlantis* taken from *Mir*. The images were recorded using the

70-mm IMAX camera system.

The IMAX images are part of a larger photo gallery that includes images from the STS-71 docking mission and from STS-63, a mission flown earlier this year in which *Discovery* performed a rendezvous with the *Mir* that served as a dress rehearsal for the docking mission.

The images can be found on the STS-71 Home Page at URL:

<http://shuttle.nasa.gov/sts-71>

Links to the collection also can be found on the Today at NASA Home Page at URL:

<http://www.hq.nasa.gov/office/pao/NewsRoom/today.html>

## Repairs begin on *Endeavour's* O-ring sealant

Technicians are preparing to begin repairs on rubber sealant around the O-rings in the nozzle joints of *Endeavour's* reusable solid rocket motors on Launch Pad 39A at Kennedy Space Center.

The repairs to the Room Temperature Vulcanized rubber are designed to fill air pockets that have formed in the crevices leading to the O-rings in the nozzle joints as a result of what managers believe is a change in the way engineers apply the soft rubbery sealant during the manufacture of the nozzles.

*Endeavour's* launch on the fifth shuttle mission of the year was put on hold July 28 after managers were told that the primary O-rings in the nozzle joints of the RSRM's from STS-71 and STS-70 had suffered heating effects from the hot gasses that pass through the nozzle during the first two minutes of flight. The secondary O-rings in the nozzle joints and both the primary and secondary O-rings in the RSRM's field joints were unaffected by the hot gasses.

In preparation for the repair work, *Endeavour* was returned to Launch Pad 39A at KSC on Tuesday after a week's stay in the Vehicle Assembly

Bldg. The shuttle was hauled back to the VAB last week to protect it from Hurricane Erin, which lashed the Florida spacecoast with winds of 85 miles an hour. The storm did no damage to the launch pads or other key shuttle support facilities at the ocean-side spaceport.

Technicians from Thiokol, the manufacturer of the RSRM's, were due at KSC at week's end to familiarize themselves with the procedures necessary for the "excavation" of the RTV from *Endeavour's* booster nozzle joints and the method developed to refill the joints with the RTV substance. The actual repair work is scheduled to

begin Monday. Preliminary schedules indicate that *Endeavour* still could be ready for launch on the STS-69 mission that will deploy and retrieve a pair of satellites and feature a six hour space walk by the end of the month.

Meanwhile, the solid rocket boosters earmarked for *Columbia's* launch on the STS-73/USML-2 mission in late September were hooked up to the shuttle's external fuel tank. *Columbia* is scheduled to be moved

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## JSC plans open house

By Steve Nesbitt

JSC will open its gates to the general public on Aug. 26, welcoming the Houston community to a first-hand look inside facilities not usually seen.

The Open House, which runs from 10 a.m.-4 p.m., is being held to show appreciation to the community for its ongoing support. Visitors will get the chance to hear astronauts describe their space flights and see where they train. Engineers and scientists will be on hand to demonstrate many of the special tools and projects on which they work.

"We wanted to give a special 'thank you' to members of the local community for all the support they have given us," said JSC Director, Dr. Carolyn L. Huntoon. "We hope they will come out and see the exciting work their neighbors do."

Also on display will be space suits, moon rocks and the 100-foot vacuum chamber once used to test

the Apollo spacecraft. In a series of special presentations in the auditorium, current and former astronauts will describe space flights, scientists will show dramatic photos of the Earth taken from space and astronauts from earlier missions will offer a history lesson on America's human space flight program.

A tram will operate around the perimeter of the site, allowing visitors to ride to various stops. Visitors will be given a brochure that will include a map of JSC with all open buildings and tram stops marked.

The Open House comes during the annual Ballunar Festival sponsored by Space Center Houston, from Aug. 25-27.

This year's Ballunar Festival will feature over 60 inflatable balloons, along with other attractions. The festival will take place at Rocket Park, with activities beginning on Friday, Aug. 25, at 6 p.m.



JSC Photo by Benny Benavides

**JSC Acting Director, George Abbey, chairman of the Executive Safety and Health Committee was presented a cup cake with a single candle recently in celebration of the first anniversary of the committee's formation.**

## ESC marks anniversary

The JSC Executive Safety and Health Committee marked its first anniversary last month with a report that lost workday cases have been cut in half since last year, showing a major turn-around as the center stepped up efforts to protect both JSC employees and the environment.

"These successes could not have been possible without the conspicuous commitment, emphasis and leadership which has been displayed and encouraged by top and mid-level management since the institution of the Executive Safety and Health Committee," said Rich Dinkel, special assistant to the director for institutional safety.

The ESC initiative was JSC Director Dr. Carolyn L. Huntoon's response to a recommendation of the 1994 Safety Review Board. That board chaired by Dave Walker, commander of the upcoming

STS-69 mission, realized the importance of management involvement in safety issues.

Since the formation of the ESC, chaired by JSC Acting Director George Abbey, many accomplishments have been achieved to promote safety at JSC. Foremost was line management's acceptance of the responsibility for the safety, health and general well-being of their employees, and the significant rise in the safety awareness levels of people across the center. In addition, the enhanced communications which have resulted from the ESC's regularly-scheduled meetings, and the revitalization of the directorate safety committees have brought about a new level of awareness regarding safety.

The ESC has established and developed projects of a variety of forms to help protect both the

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JSC

## Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

**Travel fair:** 4-6:30 p.m. Aug. 15 at the Gilruth. Tickets are no charge, available at the Bldg. 11 Exchange Store though Aug. 14.

**Cowboys vs. Oilers:** Aug. 26, San Antonio. Tickets cost \$60, available on 20, 30-yard-line and end zone. Tickets include transportation.

**Sock Hop:** 50's Dinner and Dance Aug. 19 at the Gilruth Center. Tickets cost \$15.

**Schlitterbahn:** Tickets cost \$17.80 for adults and \$15.30 for children 3-11.

**Sea World:** Tickets cost \$23.50 for adults and \$16.25 for children 3-11.

**Six Flags:** Tickets cost \$23.70 for a one day pass, \$31.75 for two day pass and \$20.30 supersaver not valid on weekends in June July and August.

**Astroworld:** Tickets cost \$18.10.

**Waterworld:** Tickets cost \$9.25.

**Splashtown:** Tickets cost \$11.05. NASA family days Aug. 12-13. Tickets cost \$9.50.

**Fiesta Texas:** Tickets cost \$20.35 for adults and \$15.80 for children 4-11 and seniors over 55.

**Moody Gardens:** Discount tickets for two of three different attractions: \$9.50.

**Space Center Houston:** Discount tickets, adult, \$8.75; child (3-11), \$7.10.

**Metro tickets:** Passes, books and single tickets available.

**Movie discounts:** General Cinema, \$4.75; AMC Theater, \$4; Sony Loew's Theater, \$4.75.

**Stamps:** Book of 20, \$6.40.

**JSC history:** *Suddenly, Tomorrow Came: A History of the Johnson Space Center.* Cost is \$11.

**Upcoming Events:** Caribbean Getaway Oct. 13-16, \$100 deposit due Aug. 14, final payment due Aug. 25.

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## Gilruth Center News

**EAA badges:** Dependents and spouses may apply for photo identification badges from 7 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

**Basketball:** registration will be held the week of Aug. 14-18.

**Volleyball:** registration will be held the week of Aug. 14-18.

**Weight safety:** Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Aug. 24 and Sept. 12. Pre-registration is required. Cost is \$5.

**Exercise:** Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

**Aerobics:** High/low impact class meets from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32.

**Aikido:** Martial arts class meets from 5-7 p.m. Tuesdays and Wednesdays. Cost is \$25 per month. New classes begin the first of each month.

**Ballroom dancing:** Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.

**Fitness program:** Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information, call Larry Wier at x30301.

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## Swap Shop

### Property

Lease: Barringer Way condo, 2-1, W/D conn, pool, ex cond, storage area, no pets, \$495/mo. 486-2048.

Sale: Middlebrook, 3-2-2, oversized garage, 1,968 sq ft, \$99.5. Mary Ann, 414-9132.

Lease: Baywind condo, 1-1-1, adults, no pets, \$375/mo + dep. 333-3925.

Sale: Highland Village, townhome, 2-2.5-2A, neutral interior, plantation shutters, wood decked atrium, all appli. 498-7343.

Sale: Clear Lake Forest, 4-2.5-2, glass walled den w/hi ceiling, FPL, formals, fam room, new roof/paint/carpet/paper. 333-5300 or 326-2307.

Sale: CLC/University Green, 2-2.5-1, FPL, ceiling fans, W/D & refrig nego, \$67.5k. 486-8141.

Lease: Pipers Meadow, lg 3-2-2A, lg gameroom, FPL, deck, fenced, \$870/mo. 486-0315.

Rent: El Dorado Trace condo, 2-2, furn or unfurn, balcony, FPL, W/D, alarm, \$525, unfurn, obo. 333-8126 or 488-1327.

Sale/Lease: Condo "The Cloister", 2-2, 2 car parking, avail 9/1. x30274 or 339-0904.

Sale: Pipers Meadow, 3-2-2A, ready to move in, \$83.5k. 486-1469.

Lease: Waterfront townhouse, 2-2.5-2, W/D, ceiling fans, microwave, 45' boat slip, avail 9/1, \$1.5k/mo. x35268 or 326-4915.

Lease: Baywind II condo, 2-2, FPL, W/D, split plan, CF, \$585/mo + \$500 dep. Pete x38614 or 480-4028.

Rent: Beach house, Crystal Beach, Galveston county, all amenities, 4-2, sleeps 12, lg deck, 486-1888 or 409-684-4419.

Sale/Rent: Waterfront condo 201A, Lake Livingston, Cape Royale in Coldspring, TV/VCR, wknd/wkly/dly rates. 337-1494 or Barbara. 1-800-367-2256.

### Cars & Trucks

'92 Mazda Miata, red/black, 5 spd, PS/PW, A/C, cruise, AM/FM/cass w/CD changer, 30k mi, ex cond, \$15.8k. James. x31064 or 334-1766.

'84 Volvo 760 Turbo, good cond, blue, sunroof, A/C, auto, AM/FM/cass, \$2.5k. Linda. x45134 or 286-8138.

'73 Mercedes Benz 450 SLC, restored, A/C, red w/ beige leather, \$15k. x32257.

'74 VW thing, white, new engine/battery, good tires, \$3k obo. Dick. 335-6842 or 286-4444.

'93 Dodge Ram PU ext cab, loaded, 390 V8, 2 WD, camper shell, 29k mi, \$14k. 326-2866.

'86 Ford Club wagon van, 8 pass, dual A/C, 1 owner, \$3,950. 333-3127.

'91 CRX, red, 5 spd, clean, Kyle, 996-1264.

'83 Acura Integra LS Special Ed, A/C, sunroof, tilt, cruise, bra, ex cond. x34421 or 291-9020.

'89 Toyota PU, blk, custom paint, engine, exhaust, rims, tires, camper, clean inter, \$8,150. 332-7149.

'89 Suzuki Side-Kick, red, hard top, auto, A/C, FWD, 70k mi, \$4k. Antoinette or Kerry, 437-2731.

'87 Nissan 200-SX XE hatchback, red, ex cond, auto, all pwr, cruise, sunroof, A/C, AM/FM/cass, 97k mi, 1 owner, \$4.2k. 282-3229 or 286-4547.

'66 Mustang, 6 cyl, auto, AM/FM/cass, blue metallic paint, new carpet/dashpad/front seat covers, front & rear speakers. D. Holt, x35822.

'82 Porsche 928, auto, 93k mi, leather, runs & looks great, \$8.8k. Tom, x33651 or 280-8084.

'85 Buick Skylark, runs good, cassette, no A/C, good work car, \$800. Dennis, x31409 or 488-0182.

'94 Camaro, maroon, A/C, cruise, cassette, 36k mi, \$12k. x31443 or 997-8044.

'84 Mazda RX-7 GSL-SE, black/red, 5 spd, sunroof, AM/FM/cass, ex cond, \$2,950. 482-0415.

'93 GMC Sonoma S-19, V6, ext cab, rear seats, pwr, camper shell, 3k mi, \$4.4k obo. Doug, 286-7631.

'84 Toyota Celica, 2 dr, 5 spd, A/C, AM/FM/CD, \$2.2k obo. x35180 or 325-3706.

### Cycles

'91 Suzuki RM 125, es cond, \$1.7k. 409-945-5576.

'79 Yamaha X5-1100 motorcycle, restored, rebuilt engine, new seat/exhaust & faring, Samsonite luggage, runs great, \$1.8k. 482-6269.

'77 Yamaha RD-400, 19k mi, \$800; '73 Suzuki T-500, 14k mi, \$500, classic 2 stroke bikes, ex cond. John, 480-4101 or 482-5607.

### Boats & Planes

Sunfish sailboat w/2 sets of sails, ex cond, \$500 obo; BIC 200S Windsurfer w/extra Wishbone, \$200 obo. Dick, 335-6842 or 286-4444.

'92 Bayhawk, 18', 70 hp Yamaha, Hummingbird fish finder, garage kept, \$8.5. 482-6269.

'87 Sea Ray Express cruiser, 30', gen & air, radar & many other extras, \$43k. 332-5020.

'93 Crownline 20' IB/POB, 5.7 liter eng, OMC out-drive, loaded, AM/FM/cass, water ski gear, McClain galv trailer, \$13.5k obo. Bob, x44431 or 286-9902.

### Audiovisual & Computers

Complete Commodore computer for amateur radio, Amitor, Rty, etc, AEA CP100 TNC, Magnavox mono monitor, Okidata 82 printer, 1571 FD, ex cond, games, S/W, hardware, \$350 obo. L.G. Kraigler, 326-1946.

Radio Shack answering machine digital incoming & outgoing messages, time/date stamp, \$35. 333-2263.

Mac Powerbook, 540c, 4/320, warranty, carrying case, \$2.8k. x36243 or 488-8775.

Pioneer, 160 watts, \$160; Magnepan M61 electrostatic speakers, \$400 obo. x32567 or 488-3314.

HP 7550 A plotter 8-PIN auto paper feed, \$300 obo; Compaq 286, Windows 3.1, 2 Mb, 20 Mb HD, \$200. 554-4799.

Packard Bell Pentium, 60 MHz, 8 Mb, 420 HD, 2X CD ROM, 14.4 fax modem, 15" SVGA monitor, HP 540 printer, manuals, ex cond. \$1.6 obo. Shawn, 956-1212 or 681-3643.

Sharp 4 head VCR w/wireless remote, \$115; Goldstar video cassette, \$65; Macintosh color printer, \$95; Fisher stereo receiver, \$40; Fisher 3-way stereo speakers, \$100/pr. x42444 or 488-4382.

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## Dates & Data

### Today

**Cafeteria menu** — Special: fried chicken. Total Health: vegetable lasagna. Entrees: pollock hollandaise, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

### Monday

**Cafeteria menu** — Special: meat sauce and spaghetti. Total Health: potato baked chicken breast. Entrees: wieners and beans, sweet and sour pork chop, potato baked chicken, steamed fish, French dip sandwich. Soup: cream of broccoli. Vegetables: French cut green beans, seasoned rice, California vegetables, buttered beans.

### Tuesday

**NTA meets:** The National Technical Association will meet at 6:30 p.m. Aug. 15 at Texas Southern University School of Technology Rm. 316. For more information call Carrington Stewart at x31404.

**Cafeteria menu** — Special: smothered steak with dressing. Total Health: baked potato. Entrees: beef stew, liver and onions, shrimp Creole, baked chicken, fried cod fish, French dip sandwich. Soup: navy bean. Vegetables: steamed rice, seasoned cabbage, corn O'Brien, peas.

### Wednesday

**Scuba Club meets:** The JSC Lunarfin Scuba Club will meet at 6:30 p.m. Aug. 16 at Redfish Island restaurant on the channel at the end of Bath street under the Kemah-Seabrook bridge, Seabrook side. For more information call Fred Toole x33201.

**Astronomy seminar:** The JSC Astronomy Seminar will meet at noon Aug. 16 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

**Toastmasters meet:** The Space-land Toastmasters will meet at 7

a.m. Aug. 16 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

**Cycle club:** The Space City Cycle Club will meet for a 25-mile ride beginning at 6 p.m. Aug. 16 at the University of Houston Clear Lake soccer field. For more information on this ride and weekend rides call Mike Prendergast at x45164.

**Cafeteria menu** — Special: salmon croquette. Total Health: baked potato. Entrees: roast pork, stir fry-baked perch, steamed fish, vegetable lasagna, Reuben sandwich. Soup: seafood gumbo. Vegetables: mustard greens, okra and tomatoes, vegetable sticks, lima beans.

### Thursday

**Cafeteria menu** — Special: stuffed cabbage rolls. Total Health: baked potato. Entrees: beef tacos, ham and lima beans, pork and beef egg rolls, steamed fish, catfish, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, green beans, buttered squash, pinto beans.

### Friday

**Cafeteria menu** — Special: baked chicken. Total Health: roast beef au jus. Entrees: deviled crab, baked chicken, beef cannelloni, steamed pollock, Reuben sandwich. Soup: seafood gumbo. Vegetables: seasoned carrots, peas, breaded okra, steamed cauliflower.

### Aug. 22

**Photo club meets:** The Bay Area Photo Club will meet at 7:30 p.m. Aug. 22 at the Faith Covenant Church. For more information call Kelly Prendergast at x37655.

**BAPCO meets:** The Bay Area PC Organization will meet at 7:30 p.m. Aug. 22 at League City Bank. For additional information call Guy Thibodeaux at 333-5340.

### Aug. 23

**NMA meet:** The National Management Association will meet at 5 p.m.

Aug. 23 at the Gilruth. For more information call Kathy Kaminiski at x38706.

**Astronomy seminar:** The JSC Astronomy Seminar will meet at noon Aug. 23 in Bldg. 31, Rm. 129. A video will be shown with R. Dennicut discussing "HST Extragalactic Distance Scale." For more information, call Al Jackson at 333-7679.

**Toastmasters meet:** The Space-land Toastmasters will meet at 7 a.m. Aug. 23 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

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### Aug. 24

**NASACOM meets:** The NASA Commodore's User's Group will meet at 7:30 p.m. Aug. 24 at the Clear Lake Park Bldg. For more information call Glenda Souliere at x31764.

### Aug. 30

**Blood drive:** Rockwell will host its annual blood drive from 8-11:30 a.m. and 1-2:30 p.m. Aug. 30 at 600 Gemini. For information call Margy Pelonero at 282-3418.

### Aug. 31

**Radio club meets:** The JSC Amateur Radio Club will meet at noon Aug. 31 in Bldg. 16 Rm. 253. For more information call Larry Dietrich at x39198.

**Blood drive:** JSC will host its annual blood drive from 7:30-11:30 a.m. and 1-3:30 p.m. Aug. 31 at the Gilruth Center. For information call Marty Demaret at x36007.

### Sept. 4

**Labor Day:** Most JSC offices will be closed in observance of the Labor Day holiday.

mattress, \$300 obo. David, x32305 or 673-6224.

DR table, oval shape, 60"x40", 4 reupholstered chairs w/wheels, \$125. Dwayne, x32290 or Marilyn, 488-6509.

### Wanted

Want male/female roommate, 3-2.5 townhome, access to pool, no smokers. John, 286-7384.

Want riders to join VPSI Vanpool departing Meyerland Park & Ride lot at 7:05 a.m. for JSC, on-site workers 8 a.m. - 4:30 p.m. shift. Don Pipkins, x35346.

Want riders to join van pool from Sugarland, Southwest Houston to JSC area. Alice, x35234.

Want Bach 42B trigger trombone, will pay top dollar for ex cond. 486-6726.

Want Baby Grand piano, ex cond, prefer Kawai, Yamaha or anything in this category, 488-6798.

Want camper shell for Dodge Dakota PU. 534-2851.

Want qn or full sz BR set for teen girl; almond color dishwasher, Debbie, 750-2752 or 835-3652.

Want used Nordic Trac exercise equipment. Jerry, 326-2039.

Want Champion Juicer. Steve, x35145.

Want '84-'85 Honda Accord, 4 dr any cond. Tony, x30028 or 486-5707.

Want STS-69 payload & experiment cloth patches & decal's, Wake Shield/Spartan-201/IEH-1, Uvstar, or others. Andrew, x34312 or 280-0647.

### Miscellaneous

Canon Video Cam w/Panasonic port VCR, \$225; Realistic port cass player, \$10; Sony DXC 1800 Pro camera w/access, \$160; Pyramid Disco mixer, \$18; Casio 4 track sequencer, \$25; CS-400 pwr amp, \$300; AKAI AX-60 kybd w/2 tier stand, \$275; Simmons Percussion module MTX-9, \$120; Korg ch line mixer, \$80; Tyco Remote control cars, \$18/ea or \$45/for 3; Novatec cellular phone, \$60. P. Quinn, x38575.

Utility trailer, 5'x14' w/drive on tailgate, hvy duty, fits in std garage, \$750. 471-9432.

Joelle wedding dress, short train, white, sz 8, veil & krenelin, \$500; blk leather car mask for Honda CRX, \$50; cover for med sz cars, \$25. Su, 45722.

Golf clubs, Tiger Sharks irons, 3-SW w/graphite shafts & matching bag, ex cond. \$250. Ken, 283-9233 or 473-2602.

Phonemate 8400 telephone answering machine, \$45; NEC handheld cellular phone w/access, \$175; Franklin mint plates, "3 Little Kittens", "Fragrant Glory" & "The Simpsons", \$25/ea. Jaye, 470-1455.

Wedding gown "Demetrios", white, sz 12-14, beaded bodice & train, \$400. Jim, x38624 or 475-9671.

Wards treadmill, ex cond, \$250. 486-6726.

Rawling leather baseball/soft ball glove, youth sz, right hander, ex cond, \$10. x30261 or 334-5082.

Hydroslide knee board, \$30; Sears weed eater, needs work, \$20. Rusty, x35589 or 474-9140.

Ladies formal gown, sz 8, white w/gold sequin & beading, \$250 obo. x31056 or 486-5500.

Redfield 3x9 variable, low profile rifle scope, \$275. 486-2464.

Remington 270 caliber deer rifle w/ 4x12 Bushnell scope, \$575. 486-2464.

Airline ticket, one-way, Houston Hobby to Kansas City, must use prior to 8/14/95, \$75. 486-5927.

Extended battery, charging base & auto cord for an AT&T 3710 cellular phone, \$25. 334-1934.

Kg size waterbed frame w/mirrored hdbd & heater, no mattress, \$100; Nordic Track All-American w/electronic cadence monitor, \$225. Mitch, 282-5290 or 332-7498.

4-Channel Cessna 40T trainer airplane w/6-channel radio, 40 FP eng & access, \$300; telescope, \$30. David, 480-1934.

Weight bench w/weights & access, \$70; Trek 600 series, 10 spd, bicycle, good cond, \$80; 13" color TV w/remote, \$100. Ken, 474-7747.

Aquarium, 30 gal w/enclosed stand, access, \$75; 8x10 Dhurri rug, cream color w/blue, tan & green, good cond, \$65; Little Tykes toys, 4.5x4.5 sandbox, \$20; Airplane teeter-totter, \$20; Today's Kids picnic table, seats 4, \$

# Station Groundwork At 200 Miles Up

By James Hartsfield

Recent space walks have tested general methods and systems planned for construction of the International Space Station—the handling of large masses and test flights of the SAFER backpack among them—but on STS-69, a space walk will literally get down to the nuts and bolts of building the station.

From the installation of handrails and antennas to tests of electrical connectors, fasteners and the latest in space construction clothing and lighting, STS-69 crew members Jim Voss and Mike Gernhardt will perform almost six and a half hours of intensive tests of specific station equipment.

The space walk will be one of the busiest ever in terms of the number and the variety of tests planned, and the job of pulling it all together on the ground has been difficult as well, said Tim Brady, principal engineer for EVA equipment in the Crew and Thermal Systems Division.

"We have hardware that will be tested from all areas of the space station program," Brady explained. "But we have had a really good team effort that has made it all come together remarkably smoothly. Everyone has been very excited about it and delighted that we have the opportunity to test these items out in advance of the real thing."

Though not a dramatic space walk in appearance, the work planned on STS-69 may be some of the most important for station planners, added Gerald Miller, the lead Extravehicular Activities officer for the mission.

"The less glamorous issues are the ones that may prove to be the most worthwhile," Miller explained. "The chances are that, during station space walks, the big, highly visible tasks are not the type of thing that will often cause a problem. It is far more likely to be the day-to-day work of moving a foot restraint, connecting fasteners or making and breaking electrical connections. These types of tasks are done far more often than the large items."

The checkouts of new tools, carriers and foot restraint designs can also help lead to a reduction of overhead work in station space walks, the time spent preparing and disassembling a worksite, added Miller.

The planning of the space walk also provided a parallel to future space station work in having to coordinate varying objectives from most of the different entities involved in the station program, said Matt Mickle, who coordinated the scheduling and training for the EVA.

"The most challenging task was to get all of the objectives from all of the different hardware providers rolled into one space walk," Mickle explained. "Coordinating the work between all of the different product groups within station was a good exercise for the future."

In total, more than a dozen separate evaluations and tests are planned for the STS-69 space walk. The different tests are listed below.

## Spacesuit Modifications

One item to be evaluated that is sure to get attention due to previous tests on STS-63 are new spacesuit gloves that include electrically warmed fingers. Sensors inside the fingertips of the gloves worn during the purposefully cold tests on STS-63 registered temperatures of 40 degrees Fahrenheit, a temperature well below the comfort level of humans that resulted in ending the test and the space walk. On STS-69, Voss and Gernhardt will face the same harsh conditions—temperatures as low as minus 135 degrees Fahrenheit—seen on STS-63 to test the new gloves, said Glenn Lutz, principal engineer for the gloves in the Crew and Thermal Systems Division.

"We have done tests in the vacuum chamber where temperatures got down to minus 175 degrees Fahrenheit and the hand temperatures with the heated gloves stayed in the 70 to 80 degrees range," Lutz said.

The heating elements, powered by battery packs mounted above the wrists, are located on the back of the fingertips and do not impede the dexterity available with the gloves, he added.

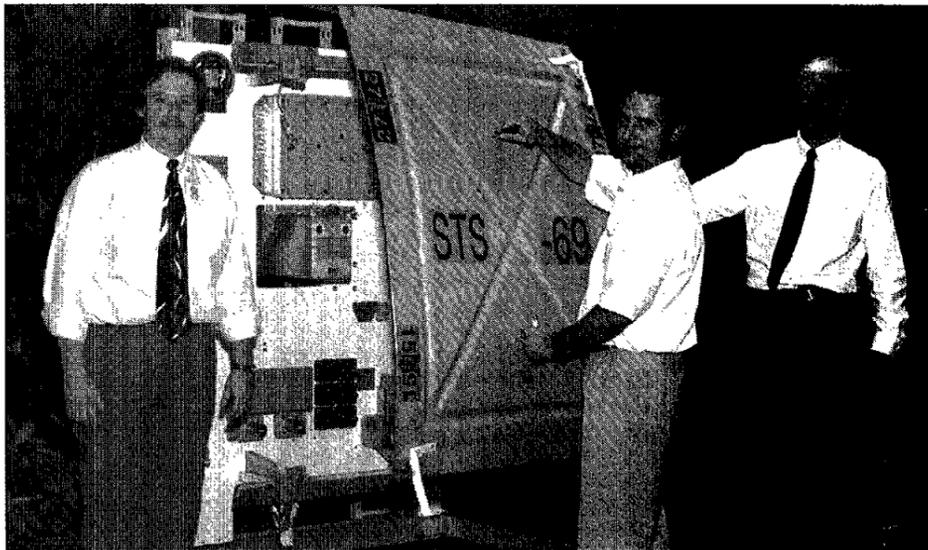
In addition to the new heated gloves, other spacesuit modifications designed to add warmth also will be checked out. They include thermal socks, thermal "toe caps" inserted in the spacesuit boots and new, adjustable thermal mittens that can fit over the spacesuit

gloves. In addition, the suits Voss and Gernhardt will wear have a new feature that allows them to completely shut off cooling water to the Liquid Cooling and Ventilation Garment, thus providing maximum warmth. They also include special sensors that will record the temperatures experienced by the boots and by the Portable Life Support System backpack throughout the space walk, Lutz said.

Also, a cube of sensors mounted near the foot restraint at the end of the shuttle robot arm and on the "task board" in the cargo bay will record temperatures during the space walk. The temperature recordings will assist space station developers in characterizing the type of environment that may be experienced.

## Better Helmet Lights

Another test of note will be the first ever shut off of all payload bay lights during a space walk, a blackout that will take place during a test of new helmet lights to be flown on STS-69. The new lights include a higher power bulb and better reflector. In addition, the new design allows the bulbs to be changed out while in orbit, if needed. They also include eas-



ier switches, adjustable swivel mechanisms, the ability to change from spot to flood lighting and easier battery installation.

## Task Board Evaluations

The majority of evaluations performed during the space walk will be mounted on a "task board" in the cargo bay.

"The task board hardware components have not flown before and will be evaluated both while the astronauts are in a foot restraint and while free floating," Brady said. "The tasks all concentrate on assembly and maintenance activities to be performed for the space station."

Brady worked with representatives from all of the International Space Station Program product teams—Boeing, Rocketdyne and McDonnell Douglas—to pull together various evaluations of equipment from each. Equipment came from Spar Aerospace as well for the planned evaluation. From Spar, a mockup of the Arm Computer Unit, essentially an avionics box planned for the station, will be evaluated as to how easily it can be removed and installed by a space walker. A key point to be tested is a magnetic soft-dock feature that allows the box to be held in place after the bolts have been loosened. From Rocketdyne, several electrical connectors and the tool used to connect and disconnect them, are to be evaluated, looking closely at the stiffness of the electrical cable and how it behaves in weightlessness. From Boeing, a Micrometeoroid Orbital Debris Shield—an example of what will cover modules on the station—will be evaluated as to how well it can be removed and reinstalled.

In addition, a variety of fasteners—push-and-turn designs, captive bolts, and a special expandable diameter fastener that may be used on the station robotic arm—will be checked. Also, Voss and Gernhardt will evaluate the installation and removal of an avionics box as if replacing such an item on the station, checking its removal, temporary stowage and installation.

## Tethers

Several different tethers will be evaluated during STS-69. A Body Restraint Tether, designed to hold the space walker steady when clamped to a handrail, will be evaluated. Gernhardt helped develop the system which is hoped to provide a quick method of supplying stability for a space walker in a variety of locations where a foot restraint is not available. The tether essentially seeks to provide the astronaut with a "third hand" to hold him stable while he works, said Shelby Lawson, the engineer who helped oversee development of the tether. It does not replace the standard tether worn during space walks for safety reasons, serving only for added stability, Lawson added.

In other evaluations, an improved version of the Rigid Tether, a device first flown on STS-64, will be tested. The Rigid Tether is used to allow astronauts to more easily carry large objects, such as a foot restraint, with them as they move from site to site by hooking them to their spacesuit.

A third type of tether to be studied is the Orbital Replacement Unit Restraint Tether, a tether to be used to allow astronauts to temporarily secure space station replacement unit boxes while they work. The restraint tether will be evaluated in tandem with the evaluation of replacing a simulated station avionics box.

## On-Orbit Installed Appendages

In order to be launched as compactly as possible, the station's modules and nodes will have few appendages attached when they are first put into orbit.

On STS-69, the installation mechanisms for two such appendages will be evaluated—space walk handrails for the station and the contingency subsystem antenna boom.

The On-Orbit Installed Handrail, designed by W.B. Wood of the Crew and Thermal Systems Division, needs no bolts. It is secured by two sliding latches that will lock it into position. Voss and Gernhardt will attach such a handrail, built onsite at JSC, during the space walk to evaluate the mechanism.

The Assembly Contingency Subsystem Antenna Boom will simulate the base of an antenna on station to be installed in orbit. Voss and Gernhardt will evaluate both the installation and removal of the antenna base during STS-69, installing four spring-loaded bolts and nuts to hold it in position. The boom was provided by McDonnell Douglas.

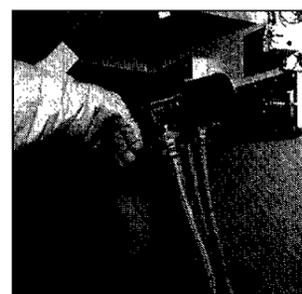
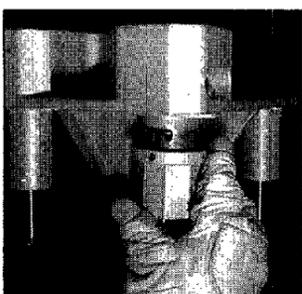
## Tools and General Equipment

A variety of tools will be evaluated simultaneously with evaluations of other items, many of them tools for a specific task. They include a special tool of the electrical connectors to be

tested; a handling tool for the Micrometeoroid Orbital Debris Shield; and a Micro Adapter Tool used for the Arm Computer Unit evaluation. In addition, Voss and Gernhardt will evaluate how well they can install a special foot restraint mount, called the On-Orbit Installed Worksite Interface, while free-floating as well as assessing a design change to the load limiting portion of the Articulating Portable Foot Restraint simulator.

Even the labeling planned for station will be checked during the STS-69 space walk. While performing the varied equipment checks, an evaluation of the labels on the task board equipment will be performed.

Also in tandem with other work, the Electronic Cuff Checklist, a wrist-top computerized space walker's checklist that will be making its third shuttle flight, will be critiqued. □



From top to bottom, left to right: From left, George Hogan and Kent Copeland of Oceanering Space Systems and Tim Brady, principal engineer for EVA equipment in the Crew and Thermal Systems Division, inspect the task board that will be used for evaluations of various station equipment. A tether designed to hold space station orbital replacement units steady during space walking work. Captive bolts and other fasteners to be used in construction of the space station will be tested. Plans for installing an antenna boom and other appendages will be checked. Electrical connectors will be evaluated. Spacesuit engineers Glenn Lutz and Bill Spenny look over several new modifications designed to help keep space walkers warmer: heated gloves, adjustable thermal mittens, thermal boot inserts and a cutoff for water to the liquid cooling garment worn underneath suits. Crew and Thermal Systems Division engineers Gary Nickel, Hiep Nguyen and Shelby Lawson inspect several special tethers.

# NASA/FAA announce aviation design competition winners

NASA and the FAA have selected a team from three Kansas universities as joint winners of their first National General Aviation Design Competition for U.S. aeronautical and engineering universities.

The joint team was composed of students and faculty from the University of Kansas, Kansas State University and Wichita State University.

The contest challenged teams of undergraduate and/or graduate students, working with faculty advisors, to address design challenges for general aviation aircraft and related transportation systems. The competition was held during the 1994-95 academic year.

For taking first place, the partici-

pating academic departments of the joint Kansas team shared a \$5,000 award and the student design team members shared a \$3,000 award. Their "Shrike" aircraft concept was conceived to introduce advanced operator-friendly technologies that promise to make general aviation flying easier than driving a car. The new series of aircraft would feature advanced flight control systems and a heavily automated, simplified cockpit display and pilot interface system.

Second place and a \$2,000 award went to the design team from Embry-Riddle Aeronautical University, Daytona Beach, Fla. Their Aquilas design concept suggested

several innovative features to enhance safety and efficiency of general aviation aircraft. Features would include improved structural crashworthiness and a deployable parachute.

Third place and a \$1,000 award went to Mississippi State University, for conducting a study of advanced cockpit and propulsion system concepts that would feature the latest in pilot displays and early warning emergency systems. These systems were designed to replace the older, less efficient systems commonly found in general aviation aircraft today.

An honorable mention went to the UPM Design Group, made up of members from the University of

Virginia, the Pratt Institute at Brooklyn, N.Y., and the Mallen Research Corporation of Charlottesville, Va. The team was honored for its futuristic state-of-the-art aircraft design, which includes an "ergonomically" designed cabin interior providing passengers with access to the latest in onboard computer communication systems.

The design competition was created because NASA and the FAA want to increase the involvement of the academic community in the revitalization of the U.S. general aviation industry while providing real-world design and development opportunities for students.

The competition is now an annual event. It allows university stu-

dents to participate in a national effort to develop technologies for an aircraft transportation system for smaller aircraft. It is intended to help raise student awareness of the economic relevance of general aviation and its value for business and personal use.

Design packages are reviewed by a panel of industry and government experts who provide feedback to the student teams.

Design packages for the 1995/96 NASA/FAA General Aviation Design Competition are due by May 6, 1996. Winners will be presented with their awards at the annual Experimental Aircraft Association Fly-In Convention and Sport Aviation Exhibition in Oshkosh, Wis.

## Computer security symposium to be held next month

Lewis Research Center along with the Information Systems Security Association, Information Systems Audit and Control Association and the National Computer Security Association are hosting a "Network System Operating Threats from Hackers, Crackers and Sniffers Symposium" on Sept. 11-13 at the Cleveland Airport Marriott.

This symposium will draw together some of the best computer security practitioners from the public and private sectors to discuss the nature of the growing menace from computer penetrations, as well as the serious magnitude of this threat and the potential consequences.

Actual cases will be discussed and the culture and criminal uses of hackers techniques will be described. Some of the more revealing details will describe the vulnerability of the personal computer in the privacy of homes.

Cost of the symposium is \$345. JSC civil servants must fill out a JSC Form 75. For more information contact Pam Kotlenz at (216) 433-5164 or Kathy Clark at (216) 433-8354.



Matt Abbott of the Flight Design and Dynamics Division redeems his cafeteria coupons to Bea Lara, a Bldg. 11 cafeteria cashier.

## Coupons now redeemable

The JSC cafeterias are now redeeming those cafeteria coupons.

Employees who collected coupons may redeem seven coupons for one daily special or an equivalent. Coupon redemption will be accepted until Sept. 30.

"We really wanted to show our customers how much we appreciate them," said Teresa Sullivan, JSC Exchange Operations manager. "This is one small way we can say thank you to the JSC employees for their business."

## Seminar focuses on kids

The Total Health Program will present a seminar on "Latch-Key Children: How to Protect Them from Danger," at 11:30 a.m. Wednesday in the Teague Auditorium.

Lieutenant Nona Holoman of the Seabrook Police Department will

discuss community programs in the area that are design to help protect children who stay at home alone until their parents get home from work.

For more information call Terri Lauderdale at x37247.

## Safety programs are working

(Continued from Page 1)

employees and the environment. Standouts among that list include a senior managers' safety course, establishment of facility managers, emergency preparedness and planning enhancements, installation of a center wide warning system, consideration of safety as a factor in contractor source selection and performance assessment, safety surveys conducted by experienced personnel who bring new insight into JSC safety, incorporation of the DuPont Safety Committee system model, Safety Awareness Day, a Close Call reporting system and inclusion of safety performance as a factor in all managers' annual performance evaluations.

During the celebration, Dinkel presented some safety perfor-

mance statistics. JSC's lost workday cases were down from a total of 77 at this time last year to about half of that so far this year, for a total of 34. The lost workday case rate is an indicator of the amount of work missed due to injuries sustained on the job (expressed as the number of cases per 200,000 hours worked). In 1995, JSC's contractors posted a rate of 0.83, down from 1.89 for 1994. JSC civil service loss work day case rate was 0.04 in 1995, down from 0.27 in 1994.

In addition, about five times as many Close Call reports have been received this year as compared to last year. Studies indicate that there are about 300 close calls for every accident that occurs. Reporting close calls is an essential element in JSC's accident prevention program.

# Huntoon looking forward to challenge of new institute

(Continued from Page 1)

choice to ensure that we achieve the necessary support and participation. The biomedical institute is the centerpiece of NASA's strategy to foster world-class life sciences research in support of human space exploration. The institute will provide us with the tools we need to understand how men and women can live and work in space, and in doing so, will provide the answers to medical problems here on Earth."

A pioneer in life sciences research for NASA, Huntoon has directed numerous important efforts in support of the agency's human space flight program. She joined NASA in 1970 as a life sciences researcher, and served in a variety of key positions before being named the agency's first woman center director in January 1994.

"I am looking forward to the challenge of helping bring broad participation to the life sciences institute," Huntoon said. "Estab-

lishment of the institute is clearly one of Mr. Goldin's highest priorities and he is committed to ensuring that resources are made available to ensure its success."

The life sciences institute has been designated by Goldin as the agency's "pathfinder" effort to expand its scientific efforts through new ways of doing business. NASA envisions establishing other institutes affiliated with NASA centers and programs across the country, and linked to the agency's core missions

of human space flight, robotic space exploration, space and Earth science and technology. Broad participation is a goal for all the institutes, and Huntoon's efforts will establish a model for later institute efforts.

Huntoon will work with Deputy Associate Administrator Alphonse Diaz, who is coordinating the agency's overall plans for establishing the sciences institutes, including efforts to consult with the administration and Congress and to secure appropriate authority.

## Travel Fair set for Tuesday

The Employee Activities Association is sponsoring a Travel Fair from 4-6:30 p.m. Tuesday at the Gilruth Center.

The fair will feature more than 50 travel experts including airlines, tour companies and cruise lines. A cache of door prizes will be awarded during the fair.

"We will probably be drawing door prize winners constantly because we have so many prizes to give away," said Ginger Gibson,

president of the EAA.

The grand prize is a Delta Dream Vacation to Orlando, Fla. The package includes round-trip airfare on Delta Airlines, four day, three night stay at the Ramada Resort Maingate and an Alamo Rental car.

Tickets for door prizes can be picked up at the Bldg. 11 Exchange Store. One ticket per badged employee. For more information, call x35352.

## Atlantis prepares for Mir

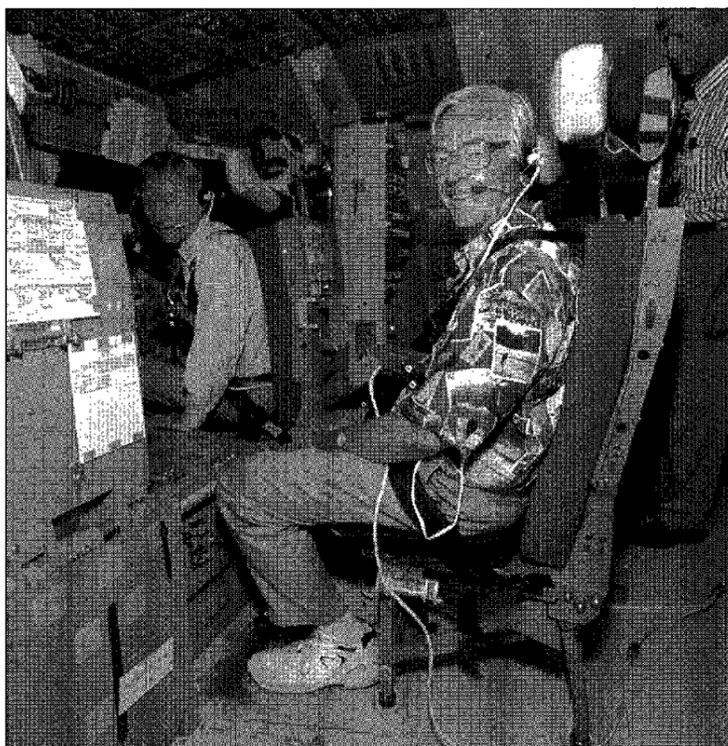
(Continued from Page 1)

from the Orbiter Processing Facility to the VAB on Aug. 21 to be mated to its stack in advance of its rollout to Launch Pad 39B on Aug. 26. Officials have not yet determined where *Columbia's* RSRM nozzle joints will be repaired, but the work is not expected to affect the targeted liftoff date of Sept. 21 on the 16-day Spacelab microgravity research mission.

*Atlantis* is in the homestretch of its refurbishment for the October STS-74 mission, the second flight to link a shuttle with the Russian Mir Space Station. The Russian-built Docking Module, which will be

mated to *Atlantis's* Orbiter Docking System through the use of the ship's robot arm, will be formally turned over to NASA in a ceremony next week at KSC.

The Docking Module will be attached to the Mir's Kristall module as *Atlantis* docks to Mir to form a permanent docking port extension for the remainder of the Phase One shuttle-Mir missions. The Docking Module will provide *Atlantis* with the clearance it needs to avoid the myriad of solar panels that will protrude from Mir in the future as a result of the addition of new arrays and the reconfiguration of existing solar panels.



JSC Photo by Mark Sowa

**SNOOPY SIMULATION**—Charles Schulz, center, and John Young, special assistant for engineering, operations and safety, check out the shuttle mission simulator in Bldg. 5. Schulz came to Houston to view his exhibit "Around the Moon and Home Again, A Tribute to the Art of Charles M. Schulz" at Space Center Houston. The exhibit features his comic strip "Peanuts" and its relationship to the space program. The exhibit will run to Sept. 17.

## Correction

In the process of electronic transfer, some names were lost from the list of employees who received Certificate of Commendation in a special awards ceremony that took place Wednesday.

Other recipients were Office of the Director, Betty McNeely; Human Resources, Karl Schuler and Dianne Stokes and Office of the Comptroller Cathey Lamb.

## Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

The Roundup office is located in Bldg. 2, Rm. 181. The mail code is AP2. The main Roundup telephone number is x38648 and the fax number is x45165.

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